



# Mental toughness: managerial and age differences

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## Abstract

**Purpose** – The purpose of this study is to investigate whether employees at various levels of managerial positions (e.g. senior, middle, and junior) exhibit different levels of mental toughness. In addition, the study seeks to explore possible effects of age on mental toughness.

**Design/methodology/approach** – A total of 522 participants working in UK-based organisations completed demographic information and the Mental Toughness Questionnaire.

**Findings** – Results revealed significant main effects for both managerial position and age. Follow-up analysis revealed that mental toughness ratings were higher in more senior positions, and that mental toughness generally increased with age.

**Research limitations/implications** – The main limitation of the study is its cross-sectional design. Longitudinal studies investigating the development of mental toughness over time or the effect of mental toughness training are needed. It appears, however, that age plays a role in an individual's mental toughness profile. This suggests that increased exposure to significant life events may have a positive developmental effect on mental toughness.

**Originality/value** – The results of the study would suggest that mental toughness can be developed through appropriate training programmes.

**Keywords** Management roles, Psychology

**Paper type** Research paper



There has been a growing interest in the concept of mental toughness in domains like sport, occupation, and the military. Such interest is not surprising because it is assumed that the characteristics underlying mental toughness are associated with increased performance and success. For example, in sport, higher levels of mental toughness have been associated with higher levels of achievement (e.g. Golby and

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Sheard, 2004; Golby *et al.*, 2003). Notwithstanding the increased interest in mental toughness, the construct is still not well understood and there is no widely accepted definition (Nicholls *et al.*, 2008a,b).

The recent sport psychology literature supports the notion that mental toughness is not a unitary concept and that it has a number of underlying components. Based on qualitative research in sport, Jones *et al.* (2002) initially proposed 12 underlying attributes. However, more recently in a follow-up study with super-elite athletes (e.g. gold medal winners or world champions) they reported 30 underlying characteristics (Jones *et al.*, 2007).

The present study, however, adopted the theoretical framework put forward by Clough *et al.* (2002). They defined the mentally tough individual as having “a high sense of self-belief and an unshakable faith that they control their own destiny, these individuals can remain relatively unaffected by competition and adversity” (p. 38). They suggested that mental toughness is a trait-like dimension of personality and their model is an extension of the concept of hardiness put forward by Kobasa (1979). In particular, Clough *et al.* proposed the 4C model of mental toughness of which the first 3Cs are adopted from Kobassa’s (1979) work on hardiness and the fourth C has been added by the researchers based on their own research with athletes:

- (1) *Control* (emotional and life), a tendency to feel and act as if one is influential;
- (2) *Commitment*, a tendency to involve oneself in rather than experience alienation from an encounter;
- (3) *Challenge*, belief that life is changeable and to view this as an opportunity rather than a threat; and
- (4) *Confidence* (interpersonal and in abilities), a high sense of self-belief and unshakable faith concerning one’s ability to achieve success.

To assess this, Clough *et al.* (2002) developed the Mental Toughness Questionnaire 48 (MTQ48) to measure total mental toughness, as well as its subcomponents. The 4C’s model has previously been indicated as “a useful blueprint for examining this important construct” (Golby and Sheard, 2004, p. 935) and has been used in a variety of sporting contexts. For example, Crust and Clough (2005) found that individuals who scored higher on total mental toughness, control and confidence were significantly more likely to tolerate a physical endurance task for longer than those individuals who scored lower on these factors. Levy *et al.* (2006) found that higher levels of mental toughness were associated with a more positive threat appraisal, better ability to cope with pain, and in the case of injured athletes, greater attendance to clinic rehabilitation. Nicholls *et al.* (2008a,b) reported that higher levels of mental toughness were associated with more problem and approach coping strategies but less with avoidance coping strategies. In addition, mental toughness and five of its subscales were moderately to highly correlated with optimism but negatively correlated with pessimism. Finally, mental toughness has been found to be influenced by both age and sporting experience (Nicholls *et al.*, 2008a,b).

As such, the MTQ48 appears to be a sensitive measure of mental toughness within a variety of sporting settings. From a coaching and business perspective, the MTQ 48 has been presented as an effective instrument for the measurement of Mental Toughness (Clough and Strycharczyk, 2008). To further establish this, this study

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aimed to use the MTQ48 within an occupational domain to demonstrate its applicability. The primary aim was to assess any differences between scores on the MTQ48 between people employed in a variety of managerial positions. Based on earlier findings in the domain of sport (Nicholls *et al.*, 2008a,b) we predicted that higher levels of mental toughness would be associated with higher levels of achievement, partly due to higher-level managers have more responsibility. Secondly, differences in the scores on the MTQ48 across age were also assessed. Age related differences could provide an indication of whether mental toughness is a relatively stable trait like personality characteristic, or something that changes with experience and/or exposure to the different positions people occupy in life. Any observed effects of either or both of these factors would have interesting implications for the utility of the MTQ48 and the potential development of mental toughness.

## Method

### *Participants*

The present study consisted of 522 (210 male, 304 female, eight missing entries) participants working in UK based organisations. A total 157 of the participants worked as senior managers, 189 as middle managers, 112 as junior managers, and 64 in a clerical role. The sample consisted of 489 Caucasian, 17 black, 8 Asian and 8 unspecified participants. Participants gave consent for their responses to be used for research purposes.

### *Instruments*

The present study used the 48-item Mental Toughness Questionnaire (MTQ48; Clough *et al.*, 2002). The MTQ48 assesses total Mental Toughness (MT) and four subcomponents: challenge, commitment, confidence (interpersonal and in own abilities) and control (emotional and life). Each item is rated on a five-point Likert-type scale anchored at 1 = Strongly disagree to 5 = Strongly agree . . . , and example items are; I usually find something to motivate me (Commitment), Challenges usually bring out the best in me (Challenge), I generally find it hard to relax (Control), I generally feel that I am a worthwhile person (Confidence). Overall, the MTQ48 in the present study had a Cronbach's Alpha value of 0.89 with all individual scales above the recommended 0.70. In testing of construct validity, the MTQ48 also correlated significantly with: optimism (0.48); self-image (0.42); life satisfaction (0.56); self-efficacy (0.68); and trait anxiety (0.57); as well as providing a significant correlation with personal endurance (Crust and Clough, 2005).

### *Procedure*

The MTQ48 was completed as part of employee and management assessment and development centres organized by their employers and ran by an independent organization. Data was subsequently collated and analyzed. Participants indicated on standardized forms their position within their organisation, gender, and age group: < 25; 26-30; 31-35; 36-40; 41-45; 46-50; 51-55; and > 56). Of the employment position data collected, senior management, middle management, junior management, and clerical work were selected for analysis, representing employment levels throughout the organizations.

### Statistical analyses

Data were initially screened for outliers and normality. Cronbach alphas and descriptive statistics were calculated on the study variables. Following this, inter-correlations for the MTQ48 were calculated. Since age was only available as a categorical variable and because not all age categories were represented in all managerial positions, we ran two separate one-way multivariate analysis of variance (MANOVA) to ascertain whether there were significant differences between managerial position, age and aspects of mental toughness (total mental toughness, challenge, commitment, interpersonal confidence, ability confidence, emotional control and life control). Follow-up univariate analysis of variance was executed in the instance of a significant main effect. Fisher LSD test for *a posteriori* comparisons determined the exact location of the differences.

### Results

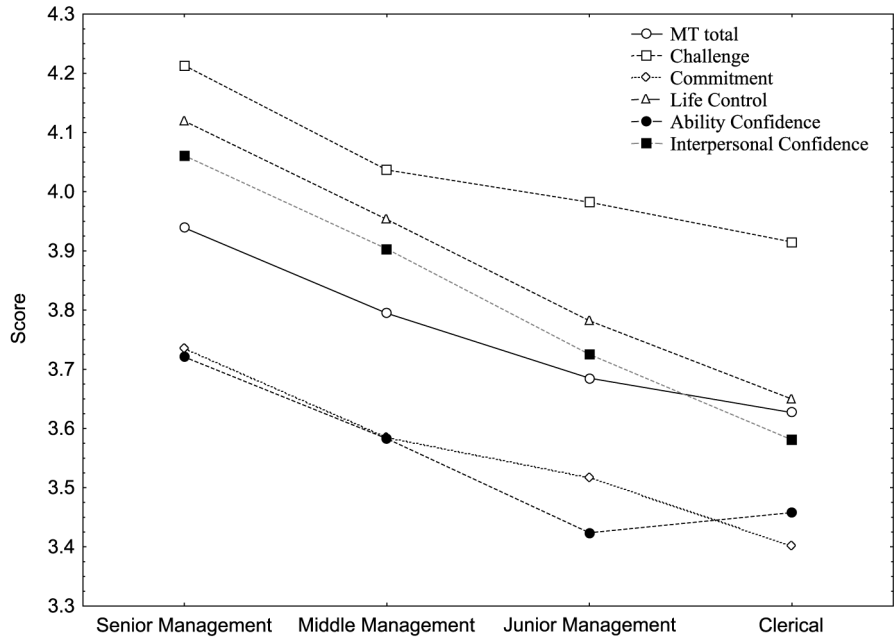
Table I provides the intercorrelations for the MTQ48. The moderate to high correlations between the two confidence subscales and the other subscales suggest that both confidence scales add unique information to this instrument.

The MANOVAs for management (Wilk's  $\lambda = 0.83$ ;  $P < 0.001$ ) and age (Wilk's  $\lambda = 0.87$ ;  $P = 0.03$ ) were both significant. The follow-up univariate analysis of variance for management showed significant main effects for total Mental Toughness ( $F_{(3,518)} = 14.65$ ;  $P < 0.001$ ; partial  $\eta^2 = 0.08$ ), challenge ( $F_{(3,518)} = 9.96$ ;  $P < 0.001$ ; partial  $\eta^2 = 0.06$ ), commitment ( $F_{(3,518)} = 10.64$ ;  $P < 0.001$ ; partial  $\eta^2 = 0.06$ ), life control ( $F_{(3,518)} = 19.10$ ;  $P < 0.001$ ; partial  $\eta^2 = 0.10$ ), ability confidence ( $F_{(3,518)} = 8.75$ ;  $P < 0.001$ ; partial  $\eta^2 = 0.05$ ), and interpersonal confidence ( $F_{(3,518)} = 13.58$ ;  $P < 0.001$ ; partial  $\eta^2 = 0.07$ ). The post-hoc comparisons for management group showed that senior managers scored significantly higher than middle and junior managers on all scales ( $P < 0.01$ ). Furthermore, middle managers scored significantly higher than junior managers and clerical staff on total mental toughness ( $P < 0.05$ ), life control and interpersonal confidence ( $P < 0.01$ ), higher than clerical staff on challenge and commitment ( $P < 0.01$ ) and junior management on ability confidence ( $P < 0.01$ ) (see Figure 1).

Follow-up analysis for age showed significant main effects for total mental toughness ( $F_{(3,514)} = 2.92$ ;  $P = 0.01$ ; partial  $\eta^2 = 0.04$ ), commitment ( $F_{(3,514)} = 2.62$ ;  $P = 0.01$ ; partial  $\eta^2 = 0.03$ ), emotional control ( $F_{(3,514)} = 2.03$ ;  $P = 0.05$ ; partial  $\eta^2 = 0.03$ ) and Life Control ( $F_{(3,514)} = 3.75$ ;  $P = 0.001$ ; partial  $\eta^2 = 0.05$ ). Post-hoc comparisons for age mental toughness, commitment, and emotional control and life

	MTQ total	Challenge	Commitment	Emotional control	Life control	Confidence ability
MTQ total						
Challenge	0.76					
Commitment	0.81	0.52				
Emotional control	0.71	0.45	0.46			
Life control	0.83	0.61	0.69	0.81		
Confidence ability	0.78	0.49	0.44	0.68	0.55	
Confidence interpersonal	0.71	0.46	0.54	0.50	0.56	0.46

**Table I.**  
Intercorrelations for the total and subscales of the MTQ48

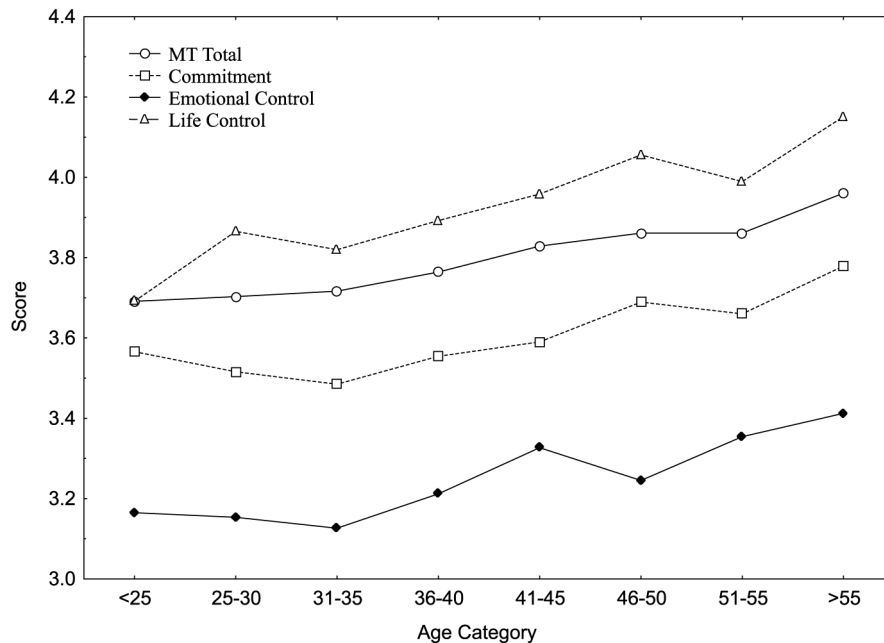


**Figure 1.**  
Relationship between total mental toughness and the challenge, commitment, confidence ability and confidence interpersonal subscales and managerial position

control scales than participants in the < 25, 26-30, 31-35 and 36-40 age categories (see Figure 2). The > 56 age group also scored significantly higher than the 41-45 age category in both commitment and life control. In a similar trend, the 51-55s showed significantly higher total mental toughness, commitment, emotional control and life control when compared with 31-35 year olds. In addition, the 51-55s scored higher on total mental toughness than the < 25 and 26-30 age groups, and reported significantly more life control than the under 25s. Meaningfully, the under 25s scored lower on Life Control than all age categories except the 31-35s, as well as reporting a lower total mental toughness than both the 41-45 and 46-50 age groups. The 31-35 year olds scored lower on total mental toughness and life control than the 41-45s and the 46-50s, as well as being significantly lower in commitment and emotional control than 46-50 year olds. Finally, the 36-30 age group scored significantly lower on commitment and life control than the 46-50 year olds.

**Discussion**

The aim of this study was to assess whether employees at various levels of managerial positions (e.g. senior, middle, and junior) exhibited different levels of mental toughness and whether mental toughness is moderated by age. Results showed that levels of mental toughness, using the MTQ48, significantly varied between employees in different managerial positions. Overall, senior managers demonstrated the highest levels of mental toughness recorded, also scoring significantly higher on five of the six subscales. Middle managers demonstrated the next highest mental toughness profile, scoring higher than junior managers and clerical staff on total mental toughness, life control, ability confidence and interpersonal confidence, and higher than clerical staff



**Figure 2.**  
Relationship between age and total mental toughness score and the scores for the commitment, emotional control and life control subscales

on challenge and commitment. Junior managers' mental toughness profile was similar when compared to clerical staff.

Such results would suggest that the mental toughness profile of individuals in the highest managerial positions would consist of a greater tendency to feel and act as if one is influential (life control); greater involvement in encounters and tasks (commitment); a greater belief that their life is changeable and to view this as an opportunity rather than a threat (challenge); and a high sense of self-belief and unshakable faith concerning one's ability to achieve success (ability and interpersonal confidence). The results would also provide support for previous findings on mental toughness in sport as (Golby and Sheard, 2004; Nicholls *et al.*, 2008a,b) as well as research on hardiness in the workplace and the battlefield (Rush *et al.*, 1995; Bartone, 1999; Westman, 1990).

Mental toughness, like other essential managerial skills, appears to be a characteristic, which can be developed. That is, mental toughness and three of its subscales were found to vary significantly as a result of increasing age. In particular, it appears that when people get older total mental toughness rises as well as commitment and life control and emotional control. For example when compared to older individuals, individuals aged 25 years and younger would demonstrate a lower belief that they are influential (control); a tendency to experience alienation from encounters (commitment); a view that life is unchangeable and that opportunity can be a threat (challenge); and a low self-belief in their ability to achieve success (confidence). The findings of the present study are similar to those of Nicholls *et al.* (2008a,b) who also found increases in commitment, life and emotional control with age in a sample of athletes. Such findings are reminiscent of

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another characteristic associated with leadership, emotional intelligence (EI). Like mental toughness in the present study, EI has also been found to increase with age (Goleman, 1998a,b).

The finding that employees in higher managerial positions exhibiting increased scores for total mental toughness as well as most of its subscales, could potentially be interpreted in two ways. Firstly, it could suggest that mental toughness can be a significant indicator of potential for level of achievement and managerial position attained; although we do not have performance data to corroborate such a finding and it is suggested that future research should take this into consideration. Or second, it may imply that through their roles in organisations, more senior employees develop higher levels of mental toughness over time. However, such finding might be confounded by the notion that age also resulted in significant variability in mental toughness. In particular, as employees aged, they developed higher levels of mental toughness. In order to investigate the possible interaction effect of age on managerial position we ran a MANOVA for the Senior managers only with age (not including <25, 26-30 and 31-35 categories) as the independent factor and total mental toughness and the subscales as the dependent factors. This analysis was non-significant (Wilk's  $\lambda = 0.79$ ;  $p = 0.27$ ). This would provide tentative support for the notion that higher managerial positions are associated with increased mental toughness, either through selection or development. Future research may benefit through attempts to assess individual's mental toughness over the long term.

The finding that mental toughness was related to age has important theoretical implications. In particular, it appears that when people get older they improve in overall mental toughness, and more specifically in their levels of commitment, emotional control and life control. Clough *et al.* (2002) have suggested that mental toughness is a trait-like personality characteristic, and Golby and Sheard (2004) have suggested genetic links. However, our results suggest that life experience may well be an important factor in determining mental toughness levels. Such findings are akin to those on emotional intelligence in that it appears that mental toughness, like EI, has both a genetic component and life experience component (Goleman, 1998a,b). These findings have significant implications for the development of mental toughness. The data suggests that mental toughness can develop over time and potentially with increasing responsibility. As such, the possibility that mental toughness can be trained and developed through specific training schemes seems highly likely. In contrast to EI, which suggest to train in particular the limbic system, there are no specific guidelines or underlying mechanisms which would explain the development of mental toughness. In addition, programmes have been developed to incorporate IE training into the curriculum of business students (Tucker *et al.*, 2000).

Although previous research has assessed the trainability of hardiness in occupational settings (e.g. Maddi *et al.*, 1998), future research should assess specific mental toughness training schemes. Such training could directly follow the 4Cs model (Clough *et al.*, 2002) by improving total mental toughness through the development of commitment, control, challenge and confidence. Positive findings in such studies would have implications for the development of mental toughness in the workplace, improving individual ability to deal with stress and adversity.



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With previous research demonstrating that hardiness can act as a buffer against stress and improve functioning in stressful occupational settings (e.g. Kobasa, 1979; Maddi *et al.*, 1998; Wiebe, 1991), those individuals with the lowest mental toughness profiles would be those who would open to the greatest benefits of such training. In particular, younger individuals in lower management or clerical positions may find themselves particularly exposed to the effects of stress. Furthermore, as such positions may not necessarily represent the least stressful in organisations and an inability to deal with stress may well be linked to job or career changes or reduced work related performance. All such areas may prove fruitful areas of future research. Furthermore, in line with the development of mental toughness with age, future research should assess mental toughness in relation to significant life events to ascertain whether exposure to specific events is important in the development of mental toughness.

Despite having a good sample size, a limitation of the present study was its cross-sectional nature. Such an approach does not allow establishing whether individuals with high levels of mental toughness are more likely to be promoted to higher managerial positions or if individuals employed in higher managerial positions develop higher levels of mental toughness. A longitudinal approach is best employed to assess the direct impact of significant life events on mental toughness, and how individuals cope in such situations. Such an approach would be time-consuming, but will provide the best opportunity to see the gradual changes that the current data suggests the workplace would seem to produce. In addition, the present study was not able to investigate possible interaction effects between managerial position and age. Finally, this study did not investigate whether higher levels of mental toughness were associated with higher managerial performance. It would be an important aspect of future research to consider this relationship.

The present study showed that the MTQ48 was able to differentiate employees of differing managerial responsibility. In addition, age also appears to play a significant role in an individual's mental toughness profile. This suggests that increased exposure to significant life events may have a positive developmental effect on mental toughness. In addition, it would indicate that mental toughness can be developed. A possible practical implication of the present and future research would be that if mental toughness is positively associated to managerial performance than organisations might select individuals for managerial positions based on levels of mental toughness or instead implement training opportunities to develop levels of mental toughness.

The present results provide indirect evidence that development of mental toughness could be important in becoming a successful manager. However, other aspects like theoretical knowledge and technological competence need also be developed to become successful. Future research opportunities have been suggested, particularly longitudinal approaches, associations with performance and assessment of development strategies' impact on reported mental toughness and subsequent ability to cope with stress.

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